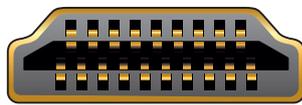


# HDMI - High Definition Multimedia Interface

Introduced in 2003, HDMI has since become the **standard interface for digital image and sound transmission**, and it connects output devices with playback devices. HDMI convinces with high data transfer rates that enable a problem-free forwarding of high-resolution video and audio data and the integrated copy protection (HDCP) prevents the copying of the multimedia contents.

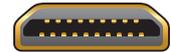
## Connectors



HDMI-A male



HDMI Mini-C male



HDMI Micro-D male



HDMI-A female



HDMI Mini-C female



HDMI Micro-D female

Since January 1 in 2012, HDMI products may not be marked with version numbers anymore and only differ based on various specifications. The HDMI Organization has set the following designations: **Standard HDMI**, **Standard HDMI with Ethernet** (must have an additional channel for Ethernet), **High Speed HDMI** (must support HD Audio, Full HD 3D resolution und 10.2 Gbps), and **High Speed HDMI with Ethernet** (must have a channel for Ethernet).

## HDMI versions & specifications

For a device, e.g. a TV set, to be considered HDMI-compliant, certain formats (features) must be given. In addition, the HDMI standard knows optional formats, such as many audio channels. The following overview shows the **specifications for the highest possible optional formats**. These are set by the HDMI Organization. An HDMI-verified device of the respective version offers the following maximum specifications:

| HDMI version                     | 1.0           | 1.1 | 1.2 | 1.3             | 1.4                           | 2.0 | 2.0a |
|----------------------------------|---------------|-----|-----|-----------------|-------------------------------|-----|------|
| Official designation             | Standard HDMI |     |     | HDMI High Speed | HDMI High Speed with Ethernet |     |      |
| <i>supports / is capable of:</i> |               |     |     |                 |                               |     |      |
| DVD-Audio                        | ✗             | ✓   | ✓   | ✓               | ✓                             | ✓   | ✓    |
| Dolby TrueHD bitstream           | ✗             | ✗   | ✗   | ✓               | ✓                             | ✓   | ✓    |
| DTS-HD Master Audio bitstream    | ✗             | ✗   | ✗   | ✓               | ✓                             | ✓   | ✓    |
| Enhanced CEC                     | ✗             | ✗   | ✗   | ✓               | ✓                             | ✓   | ✓    |
| 3D over HDMI                     | ✗             | ✗   | ✗   | ✓               | ✓                             | ✓   | ✓    |
| Ethernet channel                 | ✗             | ✗   | ✗   | ✗               | ✓                             | ✓   | ✓    |
| Audio return channel (ARC)       | ✗             | ✗   | ✗   | ✗               | ✓                             | ✓   | ✓    |
| 4K resolution @ 30 Hz            | ✗             | ✗   | ✗   | ✗               | ✓                             | ✓   | ✓    |
| 4K resolution @ 60 Hz            | ✗             | ✗   | ✗   | ✗               | ✗                             | ✓   | ✓    |
| 4K resolution 3D                 | ✗             | ✗   | ✗   | ✗               | ✗                             | ✓   | ✓    |
| 32 channel audio                 | ✗             | ✗   | ✗   | ✗               | ✗                             | ✓   | ✓    |
| 21:9 cinema aspect ratio         | ✗             | ✗   | ✗   | ✗               | ✗                             | ✓   | ✓    |
| Multi stream audio / video       | ✗             | ✗   | ✗   | ✗               | ✗                             | ✓   | ✓    |
| HDR                              | ✗             | ✗   | ✗   | ✗               | ✗                             | ✗   | ✓    |

## HDMI cables

Using **special cables**, it is possible to connect various HDMI devices with each other, e.g. a TV set and a PC. The general rule here is: The longer the HDMI cable, the more important the **shielding**.

This has the purpose of preventing signal interference due to power cables routed in the vicinity. Cable shielding is possible in several ways. Examples are mesh shielding and foil shielding, plugs with metallic sheaths and contacts with gold plating.

The **diameter** of the copper wire is also important. The unit of measurement here is called AWG (American Wire Gauge), which indicates the diameter of the wire: A lower value indicates a higher diameter (thus, an AWG of 0000 indicates a diameter of 11.68 mm; an AWG of 36 corresponds to 0.127 mm).

Delock offers a **large selection of HDMI cables** for many purposes and in various designs. Two examples for High Speed HDMI cables:

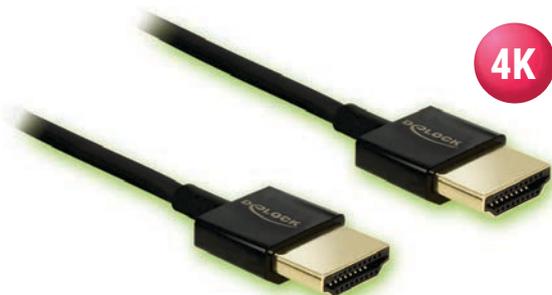


▶ Item 84333

### High Speed HDMI cable

- **Connectors:**  
High Speed HDMI-A 19 pin male > High Speed HDMI-A 19 pin male
- 2 x ferrite core
- Cable gauge: 28 AWG
- Gold-plated connectors, metal housing
- Transfer of audio- and video signals
- Data transfer rate up to 10.2 Gbps
- Cable length: ca. 2 m

Also available in cable lengths 3 m (Item 84334) and 5 m (Item 84335)



▶ Item 84786

### High Speed HDMI with Ethernet cable

- **Connectors:**  
High Speed HDMI-A 19 pin male > High Speed HDMI-A 19 pin male
- Cable gauge: 36 AWG
- Gold-plated connectors, metal housing, triple shielded cable
- Combines transfer of audio-/ video signals and Ethernet connection
- Data transfer rate up to 18 Gbps
- Resolution up to 4K Ultra HD (3840 x 2160 @ 60 Hz), depending on the system and the connected hardware
- Contains Audio Return Channel (ARC)
- Supports 1080p HFR (High Frame Rate) 3D, 21:9 cinema aspect ratio, colour sampling in 4:2:0 format (original format of Blu-Ray, DVD and TV)
- Supports CEC 2.0 control commands
- Supports Dolby® TrueHD and DTS-HD Master Audio™
- Cable length: ca. 0.5 m

Also available in cable lengths 1 m (Item 84771), 1.5 m (Item 84772), 2 m (Item 84773), 3 m (Item 84774) and 4.5 m (Art. 84775)

▶ All Delock HDMI cables

## HDMI adapters

HDMI is a further development from DVI and works with the same transfer protocol. This means that the interfaces are **compatible** and **can easily be adapted**.

Since not every monitor or TV set has an HDMI connection, there are various HDMI adapters that **enable the use of non-HDMI-compliant devices**. <sup>1</sup>

Two examples of this from the Delock product range, to connect a VGA or a DVI Monitor to a free HDMI port of the PC or notebook:



▶ Item 65512

### Adapter High Speed HDMI-A male > VGA female

- **Connectors:**  
High Speed HDMI-A 19 pin male > VGA 15 pin female
- 1 x ferrite core
- Cable gauge: AWG 34
- Chipset: LT8511
- Signal direction: HDMI input > VGA output
- VGA port with screw nuts
- Supports a resolution of up to 1920 x 1080 @ 60 Hz, depending on the system and the connected hardware



▶ Item 65327

### Adapter HDMI male > DVI 24+1 female

- **Connectors:**  
HDMI 19 pin male > DVI 24+1 (DVI-D) female
- 1 x ferrite core
- Cable gauge: AWG 30
- Signal direction: HDMI input > DVI output
- DVI port with screw nuts
- Supports a resolution of up to 1920 x 1200 @ 60 Hz, depending on the system and the connected hardware

<sup>1</sup> Enabling the use of devices without HDMI capability is only one aspect of the HDMI adapters. Besides that, there are a number of application areas and possible applications covered by Delock with its HDMI adapter product range:

▶ All Delock HDMI adapters